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PERSPECTIVES '91

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by Carl G. Thor
President
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I. U.S. Productivity Performance

Figure 1

Following World War II, the United States was able to improve labor productivity at a steady 2 to 2.5 percent per year for more than 20 years. As international competition revived in many industries, the going became tougher and the labor productivity improvement rate began to slip to an overall average of less than 1 percent per year for the 1970-89 period. What this means for the average U.S. citizen is shown in Figure 1.

If the productivity improvement rate of the 1950-70 period had continued for 1970-89, the 1989 Gross National Product per member of the labor force would have been $53,337 in 1989 dollars. But the actual value was only $41,686. The difference of $11,651 is the amount of additional standard of living that each worker would have had in 1989 if the nation had taken productivity improvement seriously!

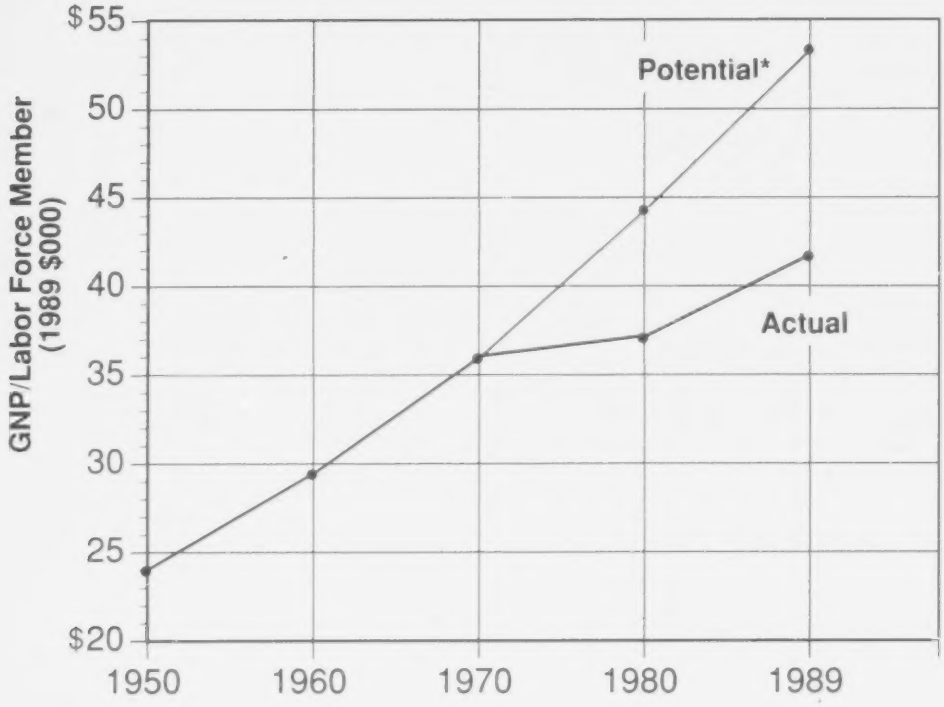
Figure 2

Figure 2 gives more detail on the recent past, stated on an output-per-work-hour basis. Labor productivity improvement always is higher in the early stages of a business recovery and lower as the recovery matures since new hiring and firing lag changes in output by several quarters. Thus, 1982-86 presents good productivity improvement and 1986-89 shows unmistakable signs of recovery maturity. In recessions, such as that of the early 80's, productivity may well shift into "negative improvement" (decline). Thus, the figure for the last twelve months can be read only with trepidation.

Productivity improvement in manufacturing has been two to four points higher than in non-farm, non-manufacturing (mostly services) in all periods since the 60's. Though it is likely that statistical methods cause an understatement of the service sector by perhaps .5 percent per year, the basic problem is clear: service industries in general have not concentrated on productivity improvement the way manufacturing industries have.

Figure 1

Standard of Living, Actual and Potential



* Potential: 1950-70 Growth Rate in GNP/Labor Force Member Applied Beyond 1970.
Source: American Productivity & Quality Center

Figure 2

U.S. Labor Productivity Growth

	Annual Percent Growth Output per Hour		
Period	Non-Farm Private Business	Manufacturing	Estimated Non-Farm Non-Manufacturing
1968-78	1.3%	2.6%	0.9%
1978-82	(0.4)	1.2	(0.9)
1982-86	2.1	4.7	1.3
1986-89	1.0	2.7	0.4
Last 12 Months October 89 - September 90	(0.5)	4.0	(2.0)

Source: Bureau of Labor Statistics, American Productivity & Quality Center

Figure 3

Productivity is usually discussed in terms of improvement trend. But it is possible to calculate and interpret the level of output per person as of a given time. Figure 3 shows labor productivity level for several important U.S. industries. This does not provide "performance" data; it is simply a measure of relative labor intensity. The oil refining industry is not "better" than the shoe industry; it is just very different in economic structure. The shoe industry, for example, is much more vulnerable to labor cost increases than is oil refining. Of course, oil refining, cigarettes, and plastics are vulnerable to other economic and social variables, but not much to labor cost shifts.

Figure 4

Figure 1 presented standard of living as level of GNP per worker. Another standard of living surrogate is the rate of improvement of real compensation per hour. The U.S. has not had a net improvement in its real compensation per worker over the past decade. Real compensation per family unit has increased because there are more workers per family, but that trend has now gone about as far as it can go. In Figure 4, the business's view and the worker's view are presented. They do not have to be in conflict. The key to mutual gain is to remain internationally and domestically competitive. If labor productivity increases are small, then compensation per hour increases must be small also. But if productivity is robust, wage increases can be, too.

From the worker's view, if unit labor cost increases are kept low, it is likely that general inflation will remain low also, since labor cost is still a major component of the inflation calculus. With low general inflation, most of the worker's wage increase falls through to real compensation per hour and thus purchasing power.

Figure 3

Labor Productivity Level, 1988
Selected Manufacturing Industries

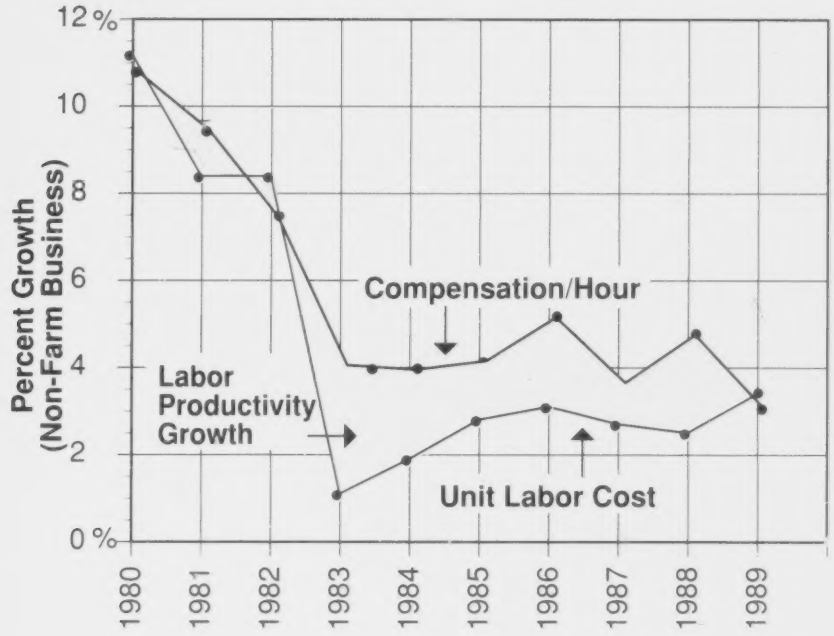
SIC	Industry	$000 Value of Shipments/ Employee
2911	Oil Refining	1,588*
2111	Cigarettes	617
2821	Plastics	609
3711	Motor Vehicles	468*
2082	Beer	455
262, 263	Paper	267
283	Pharmaceuticals	251
3312, 3315-17	Steel Mills	242
3571-72, 3575, 3577	Computer	226
2032-35	Canned Food	205
3674	Semiconductors	129
372, 376	Aerospace	128
3561	Pumps	120
3541-42	Machine Tools	104
22	Textiles	97
2711	Newspapers	75
23	Apparel	63
314	Shoes	57

* 1987 Data
Source: Department of Commerce

Figure 4

Productivity and Standard of Living

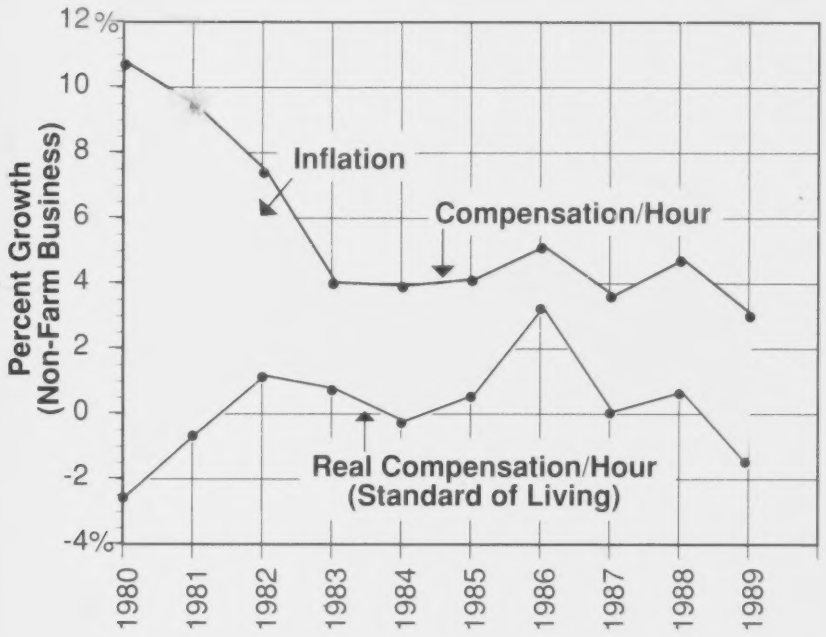
a. Business View



Source: Bureau of Labor Statistics

Productivity and Standard of Living

b. Worker View



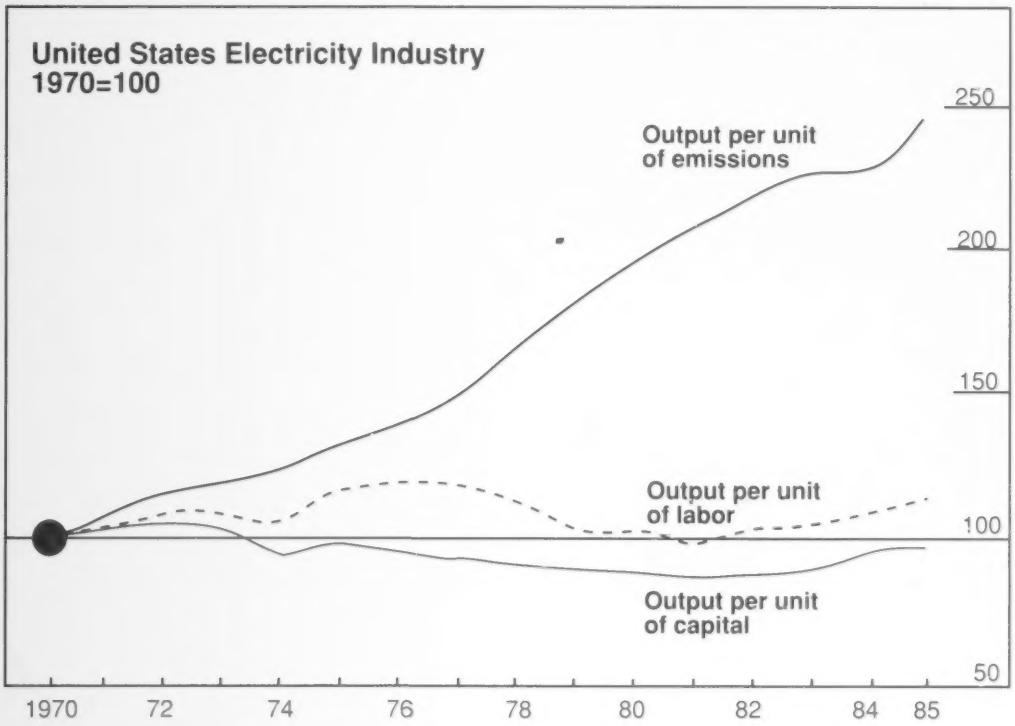
Source: Bureau of Labor Statistics

Figure 5

Figure 5 shows an unofficial form of productivity called "emissions productivity" that presents good news. While U.S. labor and capital productivity have been stagnant, the emissions productivity (output divided by units of noxious emission) for the electrical generation industry has increased at nearly a double-digit rate. There is some element of trade-off here; additional labor and capital costs have been incurred to achieve the reduced emissions level.

Figure 5

"Emissions Productivity"



Source: World Resources Institute. *The Economist*

II. Interpreting U.S. Performance

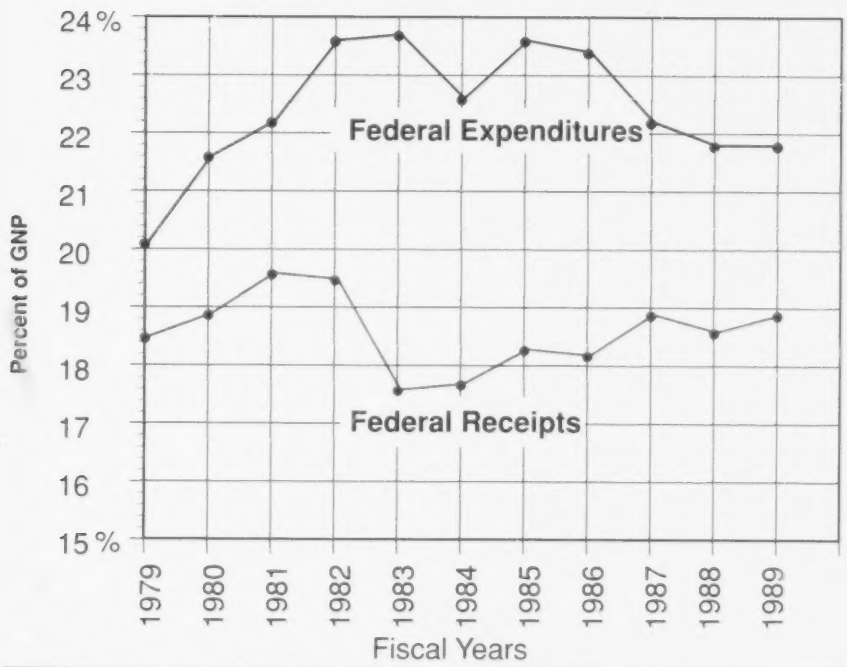
Figure 6

Everything is related to everything else, or so the economists seem to say. But at least everything is related to the dual deficits— federal budget and trade. Figure 6 presents the federal deficit as a percent of GNP. The receipts part is fairly flat for the last decade and is lower for 1989 than for the peak of 1981-82. But expenditures have not been constrained to fit within or even near the receipts. A steady climb to the mid 80's has been followed by three years of comparative restraint, but the banking crisis and Mideast military activity will now send expenditures up again.

U.S. citizens' personal savings have been insufficient to make up the budget deficit; thus the U.S. has become dependent on willing foreign investors to provide the shortfall. These foreign investors are not being charitable. They need an acceptable interest rate given their assessment of the risks involved. We now find ourselves in the position of needing more foreigners to fill the deficit with a higher risk premium needed due to our questionable banks and political discipline. This dictates a higher interest rate, which is emphatically not what is needed as the nation slips into recession!

Figure 6

Federal Receipts and Expenditures as Percent of GNP



Source: Department of Commerce

Figure 7

Figure 7 shows the slightly improving personal savings rate of the U.S., but the improvement pales against double-digit savings rates elsewhere in the world (see Figure 28).

Figure 8

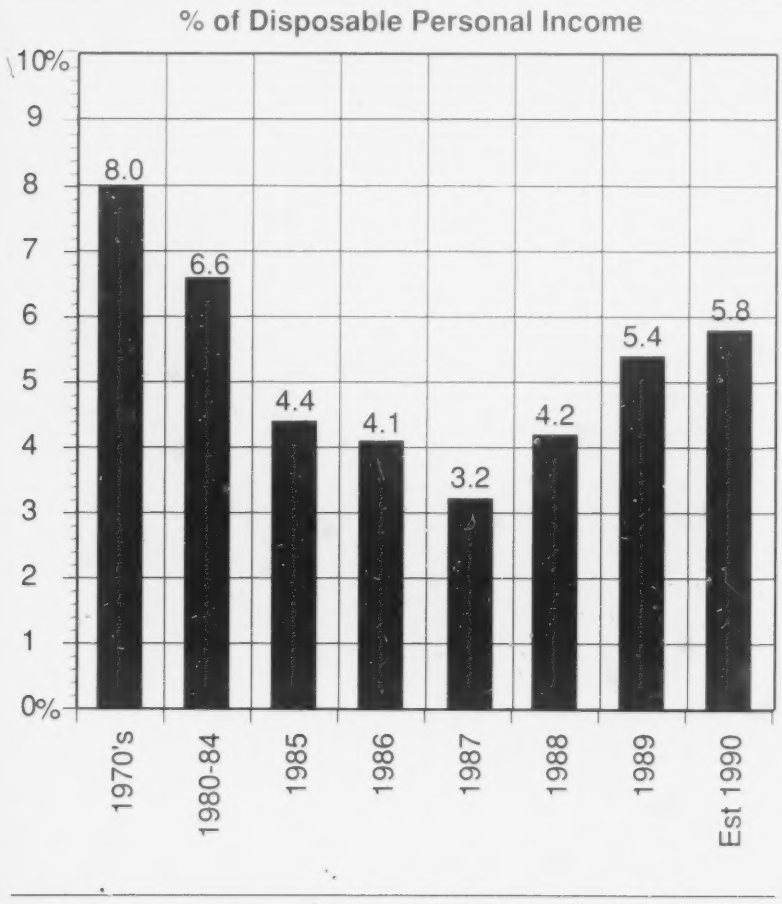
Wading through the consumers' collective balance sheet in Figure 8 shows how leveraged we are all becoming and particularly what the weakness in housing values in parts of the U.S. does to our personal outlook. The rate of increase in real net worth has slowed down to less than the traditional 3 percent per year. The overall debt/equity ratio has increased substantially, but even at .23 it is not outrageous. But the home debt/home equity ratio of .79, almost double that of 1960, suggests that there is not much room left to play that card anymore.

Figure 9

Capacity utilization (Figure 9) has come off its early 1989 peak of 85 percent to a less strained 82 percent as recessionary tendencies are growing. It is perhaps premature to worry where the expansion capacity is at a time when recession is the main worry, but many industries do not have enough capacity for their intermediate expansion plans, and the capital is not available to do anything about it until the banks and the deficits are fixed.

Figure 7

U.S. Personal Savings Rate



Source: Department of Commerce, Goldman Sachs

Figure 8

Consumer Balance Sheet

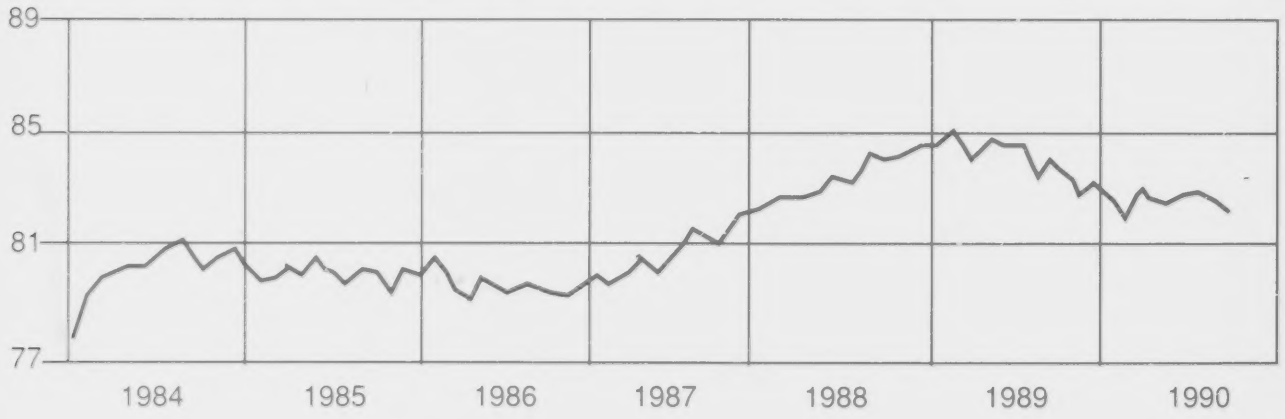
$ Trillion

	1960	1970	1980	1990 (1st Qrt)
Assets:				
Financial	1.36	2.49	6.54	13.86
Homes	.47	.82	3.01	5.44
Total	1.83	3.31	9.55	19.30
Liabilities:				
Mortgages	.14	.29	.94	2.40
Other	.09	.20	.55	1.19
Total	.23	.49	1.49	3.59
Net Worth:	1.60	2.82	8.06	15.71
Real Net Worth: (1982 $)	4.44	6.19	8.95	11.54
Overall Debt/Equity Ratio:	.14	.17	.18	.23
Home Debt/ Home Equity Ratio	.42	.55	.46	.79

Source: Goldman Sachs

Figure 9

Capacity Utilization, Manufacturing, 1984-1990



Source: Federal Reserve Board

Figure 10

Figure 10 shows the Cash Flow/Business Fixed Investment ratio. In 1986-87, new investment was mostly financed out of cash flow—a strong position to be in. In more recent times, cash flow increasingly has had to go elsewhere. In particular, it has been necessary to pay the interest charges on restructuring debt. That demand will not disappear for some time.

Figure 11

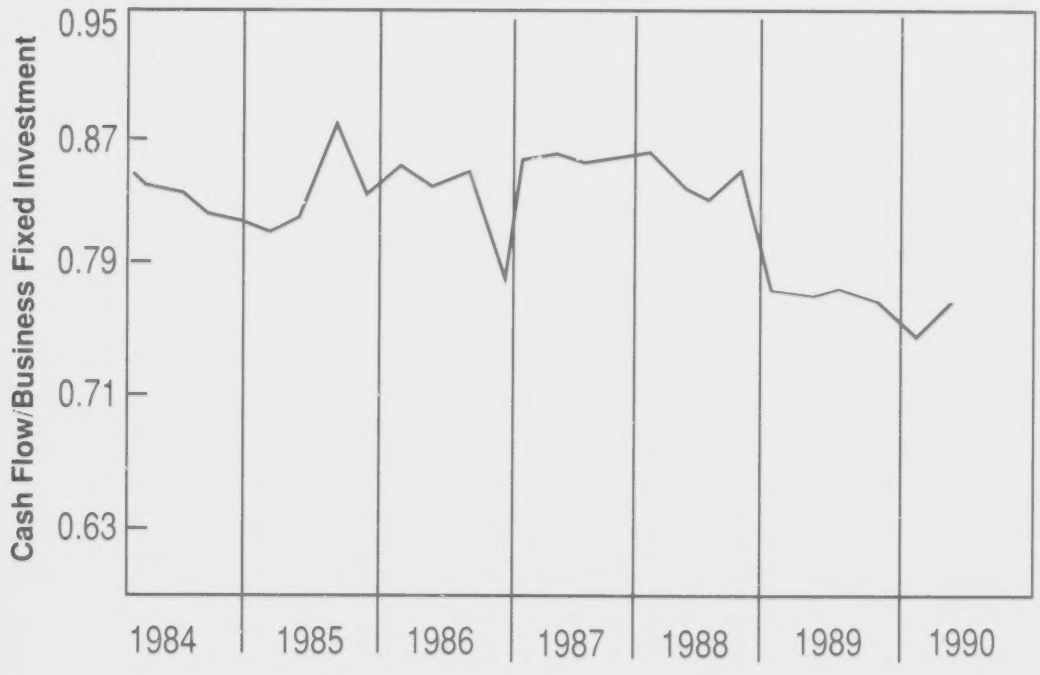
R&D has recovered from the late 70's neglect, but it is still not at a world-class level, especially in non-defense industries (Figure 11).

Figure 12

The nature of the work force is shifting in many industries. In some cases, automation has reduced the number of "direct" workers, but more indirect workers are needed to keep the system software up and to interpret periodic blips. In other cases the direct workers are being taught the full job and need less support from indirects. In any case the distinction between direct and indirect is being seriously muddled. Certainly the direct-indirect ratio, which once was watched carefully, is now of much less value when it is not even clear whether up or down is "good." This notwithstanding, Figure 12 presents some industries with relatively high and relatively low ratios of production workers (direct) to total workers.

Figure 10

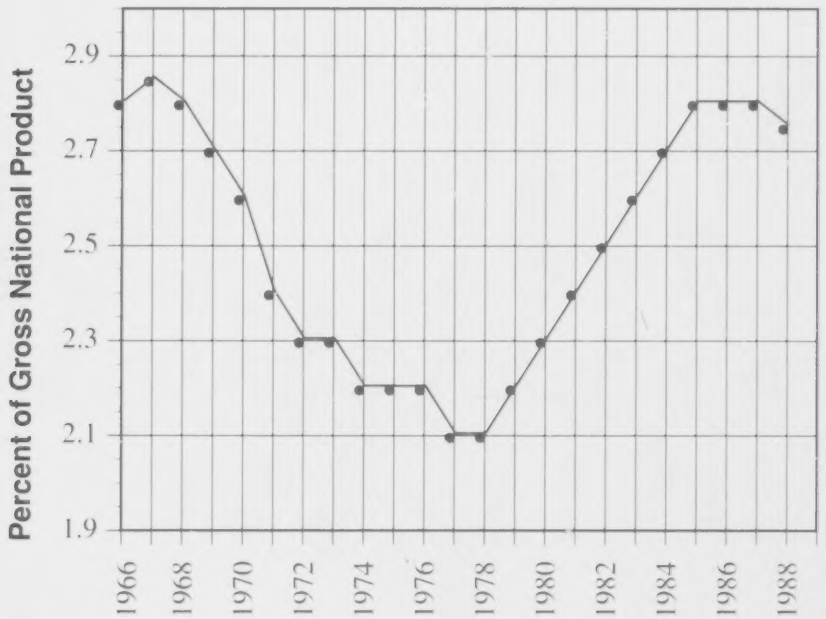
Source of Funds for Capital Spending, 1984-1990



Source: Goldman Sachs

Figure 11

U.S. Research and Development, 1966-1988



Source: National Science Foundation

Figure 12

Direct Labor Content, Selected Industries

	Production Workers as % of Total Workers	
Poultry Processing	91	(Highest)
Metal Cans	88	
Household Furniture	85	
Shoes	85	
•	•	
•	•	
•	•	
•	•	
Pharmaceuticals	44	
Photo Equipment	43	
Semiconductors	39	
Soft Drinks	33	(Lowest)

Source: Bureau of Labor Statistics

Figure 13

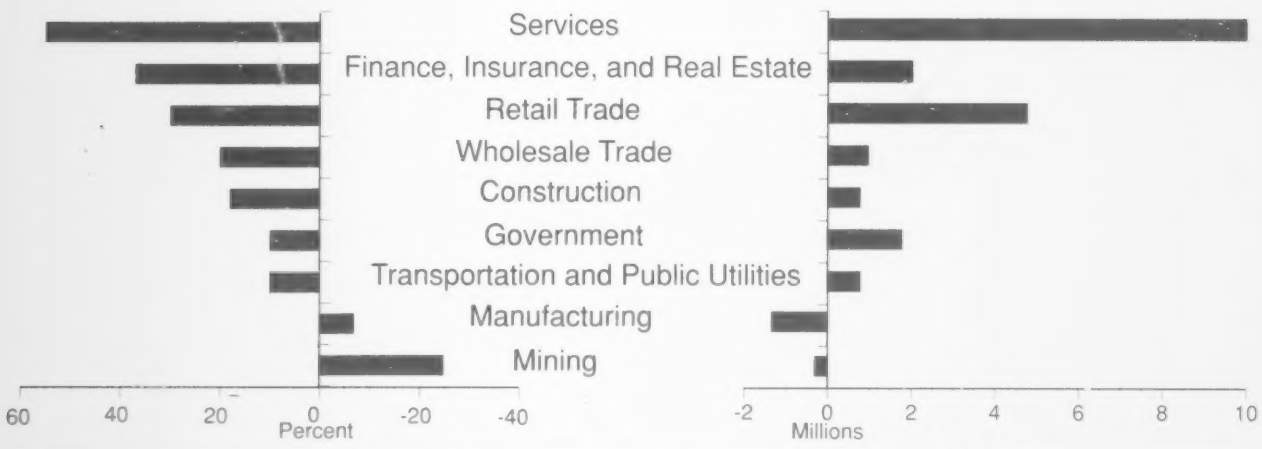
Figure 13 demonstrates that the "new" jobs are being created in service industries. Manufacturing is actually declining in employment. This will continue to be the case in the later 90's. Since the service industries are not showing productivity increases, the challenge is to get some increased output from these new workers.

Figure 14

U.S. consumer price inflation in 1989-90 crept upwards from the 1985-88 period to the 5 percent range. Figure 14 shows that the increases vary by sector, with health care continuing to be the inflation leader, as it has been for a decade. The outlook is for still somewhat higher rates, 6 to 7 percent for 1991.

Figure 13

Employment Changes by Major Industry 1979-89



Source: Bureau of Labor Statistics

Figure 14

Specific Inflation

(Annual Percent Increase)

	1979-81 Average	1982-84 Average	1985-88 Average	1989
Consumer Price Index, Urban, Total	11.7%	4.9%	3.3%	4.8%
Food	9.0	3.4	3.4	5.8
Housing	13.1	4.7	3.4	3.8
Transportation	14.7	3.6	1.2	5.0
Medical	10.3	8.9	6.7	7.7
Energy	19.2	1.1	(2.8)	5.6

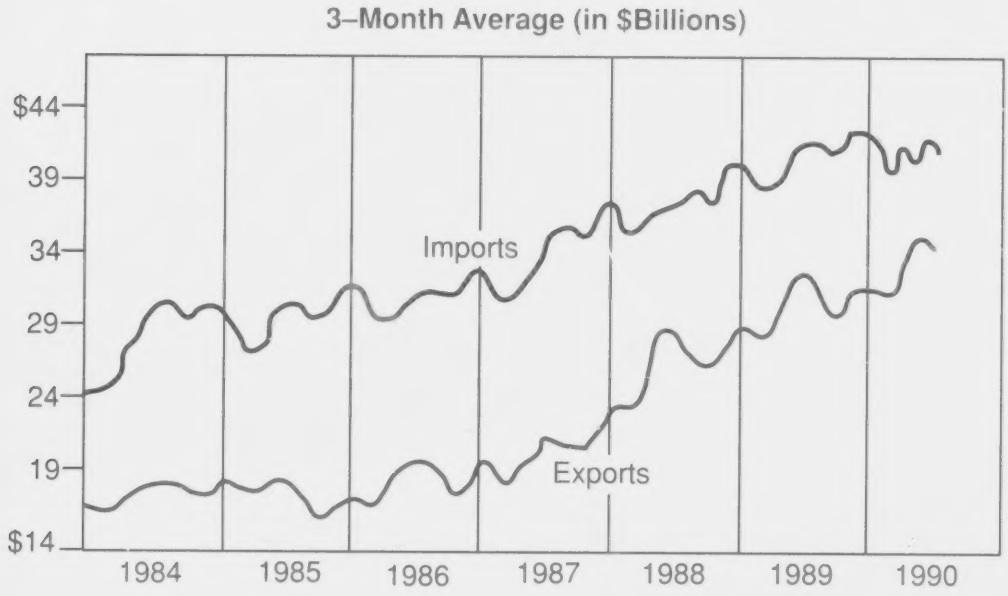
Source: Department of Labor

Figures 15 and 16

The U.S. trade balance is getting a little better as exports continue to be fairly strong and there is some evidence of leveling off in U.S. demand for imported goods. Figure 15 shows the overall numbers and Figure 16 demonstrates that the trade balance effects are concentrated in relatively few industries. The U.S. remains strong in capital goods and industrial supplies (aviation is the largest single part of that). But there are three big negatives: petroleum, automobiles, and consumer goods in general.

Figure 15

Merchandise Trade Deficit



Source: Department of Commerce

Figure 16

U.S. Merchandise Trade Balance

$ Billion

	1986	1989
Capital Goods (excl. Autos)	+ 7	+ 25
Industrial Supplies/Materials (excl. Petroleum)	- 4	+ 18
Food/Feed	-1	+ 11
Miscellaneous	+ 6	+ 4
Petroleum	- 34	- 51
Autos	- 53	- 51
Consumer Goods	- 64	- 67
Total	- 143	- 111

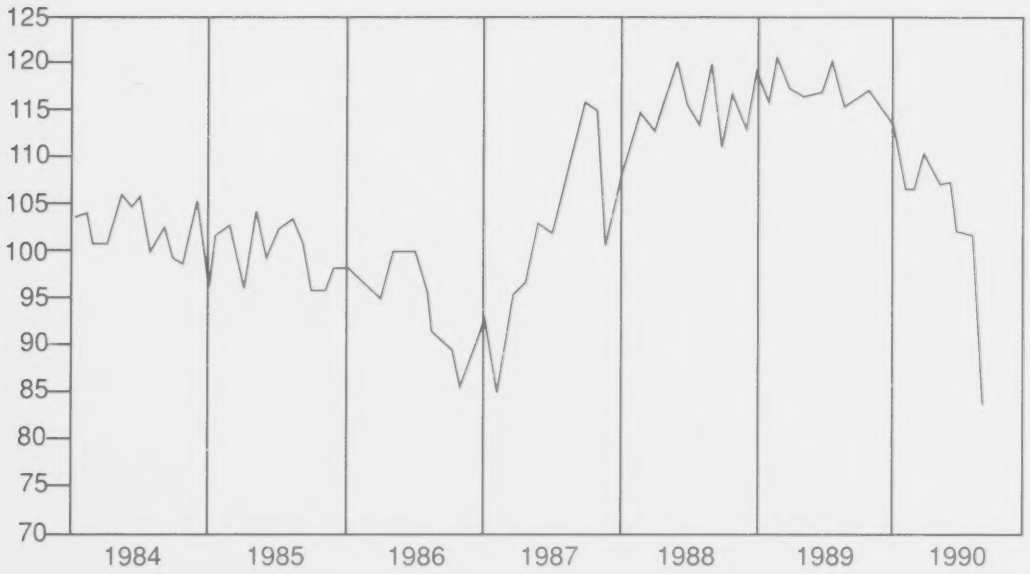
Source: Department of Commerce

Figure 17

Finally, the consumer confidence index has been in free fall since early 1990, hitting new lows every month as of press time (Figure 17). Whether the consumer is "right" or not is not very important; consumers act on their perceptions and not necessarily on facts.

Figure 17

Consumer Sentiment Index



Source: Conference Board

III. International Productivity

Figure 18

The U.S. is still the world leader in gross domestic product (GDP) per employee if the currency translation basis used is purchasing power parity. With the U.S. 1989 level set at an arbitrary 100, Figure 18 shows the nearest competitor is Canada at 94. Most of Europe is in the 80's and Japan is almost 73. However, the productivity growth story is very different. Japan's growth rate in labor productivity over 1979-89 is 3.0 percent. The Europeans are around 2 percent. The United States is growing at only 1.1 percent.

If an extrapolation were made from 1989 levels using 1979-89 growth rates, France, Italy and Japan would all pass the U.S. in the first decade of the twenty-first century.

Figure 19

In the manufacturing sector (Figure 19), the relative growth spreads are even larger. Japan has consistently improved manufacturing productivity at over 5 percent per year. The U.S. record is variable, over 3 percent in 1979-87 but only around 2 percent in 1973-79 and 1987-89. Most of Europe is again between the two in most years.

Figure 18

International Labor Productivity

(GDP/Employee, Purchasing Power Parity)

Country	1989 Level (U.S. =100)	Average % Growth 1979 - 89	Hypothetical Relative Levels * 2000	2010
United States	100.0	1.1	100	100
Canada	94.0	1.3	96	98
France	85.9	2.0	95	103
Italy	87.3	1.9	95	103
West Germany	82.0	1.7	87	93
United Kingdom	71.5	1.8	77	83
Japan	72.7	3.0	89	107
Korea	39.8	5.2	62	92

* Using 1979-89 Growth Rates
Source: Bureau of Labor Statistics

Figure 19

International Manufacturing Labor Productivity

(Percent Growth per Year, Output per Hour)

	1987-89	1979-87	1973-79
Japan	5.2	5.5	5.5
United Kingdom	5.2	4.7	1.2
France	4.9	3.0	4.6
West Germany	4.5	1.4	4.2
Italy	2.8	4.2	5.7
United States	2.1	3.4	1.6
Canada	1.9	1.7	2.1

Source: Bureau of Labor Statistics

Figure 20

New data from Japan (Figure 20) put the Japanese manufacturing sector's productivity level at 89 percent of the U.S. in 1987. Thus, if Japan is gaining ground at about 3 percentage points per year, they should pass the U.S. in manufacturing in 1991.

Japan is already ahead of the U.S. in the labor productivity of utilities and government/personal services and within reach in construction and finance/insurance. Europe does relatively best in construction and also in government/personal services. No one is near the U.S. in agriculture, mining, and transport/communications.

Figure 21

The U.S. has been very successful in wage restraint, thus counteracting in part the disadvantage in labor productivity. Figure 21 shows that the U.S. has done as well as Japan and Germany in holding national currency unit labor costs flat in the last few years. Most European countries have seen upward creep in unit labor costs in that period. On a dollar basis, the U.S. had the additional advantage of currency weakness for the 1985-87 period, which elevated the unit labor costs even of Japan and Germany relative to the dollar.

Figure 20

GDP per Employee Level by Industry Sector, Compared to U.S.

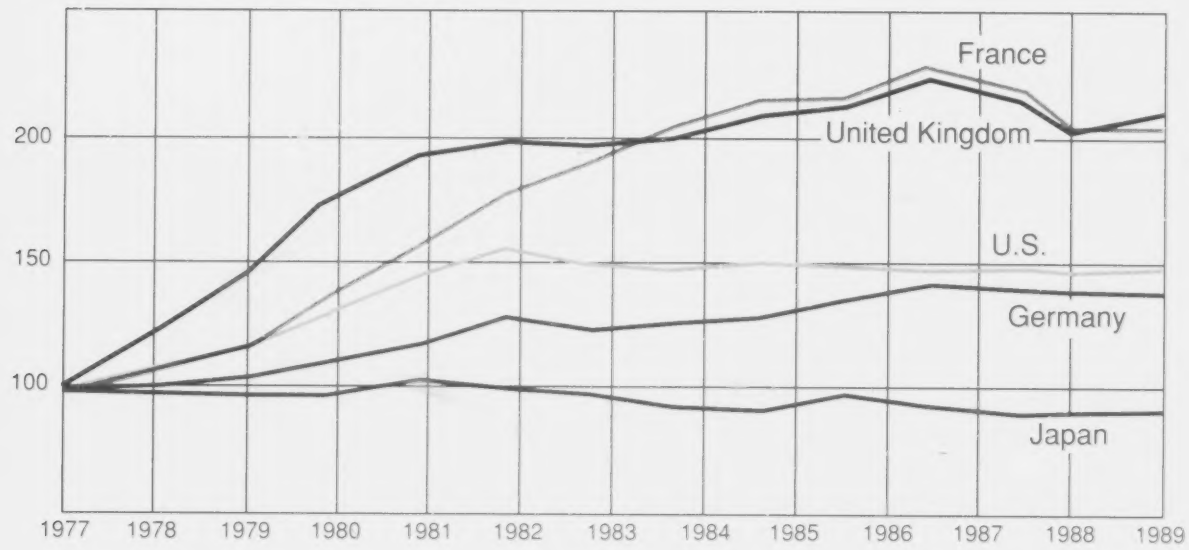
	1977 US = 100		1987 US = 100	
	Japan	Europe[1]	Japan	Europe[1]
Agriculture	32	47	30	58
Mining	24	27[2]	53	50[2]
Manufacturing	65	76	89	79
Utilities	123	78[2]	155	93[2]
Construction	68	74	85	104
Trade	44	84	60	85
Transport/Communication	54	64	64	81
Finance/Insurance	65	69[2]	84	89[2]
Govt./Personal Services	101	109	115	113

[1](France + Germany + U.K. + Italy) ÷ 4. In 1987 data, U.K. is 1986.
[2] Italy not included in Mining, Utilities, and Finance.
Source: Japan Productivity Center (Quoted in "International Productivity Journal," Spring 1990)

Figure 21

Increase in Unit Labor Cost in Manufacturing

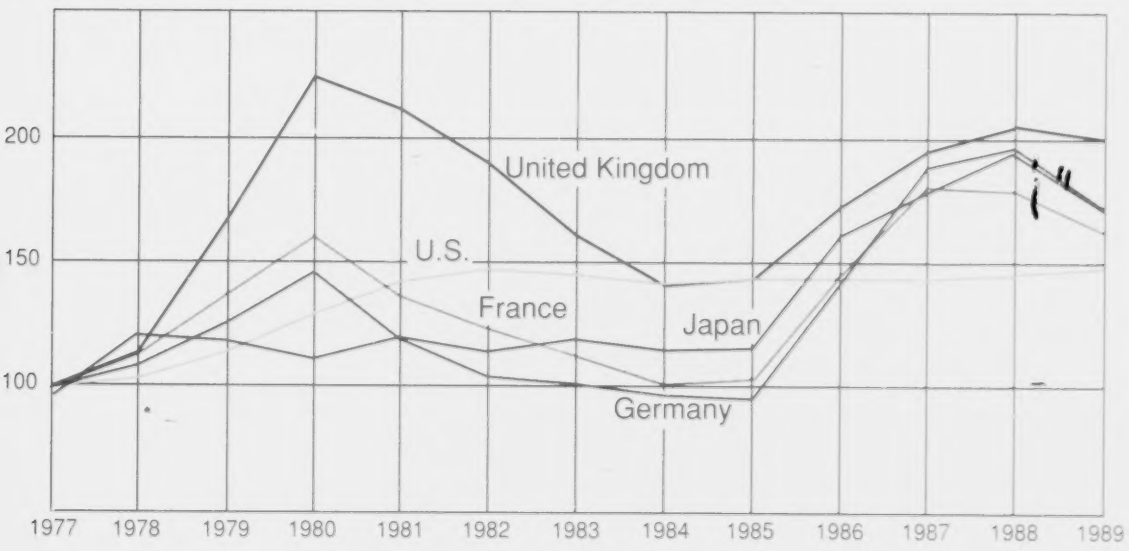
a. National Currency Basis*



*1977=100
Source: U.S. Department of Labor, Bureau of Labor Statistics

Increase in Unit Labor Cost in Manufacturing

b. U.S. Dollar Basis*



*1977=100
Source: U.S. Department of Labor, Bureau of Labor Statistics

Figure 22

Figure 22 shows GNP per capita for the top 50 reporting nations of the world. This is more a measure of standard of living than of productivity but is nevertheless roughly useful. It is based on exchange rate conversion, so the places can shift substantially from year-to-year. Switzerland, Norway, and Japan are all ahead of the U.S. on this measure. The fiftieth-place country has a GNP/capita of only about 6 percent of the level of the leading countries. But remember there are more than 50 other countries below that!

Figure 22

Level of GNP per Capita for the Top 50 Reporting Countries, 1988

U.S. $000/ Capita	Western Hemisphere	Europe	Pacific Basin	Africa & Near East
19.9 +		Switzerland Norway	Japan	
19.8	United States			
15.0 - 19.7	Canada	Sweden Finland West Germany Denmark France Austria		United Arab Emirates
11.0 - 14.9		Netherlands Belgium Italy United Kingdom	Australia	Kuwait
4.0 - 10.9		Ireland Spain Greece	New Zealand Hong Kong Singapore	Israel Saudi Arabia Libya Oman
1.3 - 3.9	Trinidad & Tobago Venezuela Argentina Uruguay Brazil Panama Mexico Costa Rica Chile Peru	Portugal Yugoslavia Hungary Poland	Korea Malaysia	Gabon Algeria South Africa Syria Jordan Turkey

Source: World Bank

Figures 23A and B

The rankings from a more comprehensive social indicator are given in Figure 23. The Human Development Index includes three factors: GNP per capita, life expectancy at birth, and adult literacy rate. The top 20 countries on this index are shown on Figure 23A, the U.S. being number 19. Figure 23B shows which countries have the biggest rating differences between the two types of indexes. Those where HDI is higher than GNP are countries where social progress is relatively ahead of economic progress; most of these are from Southeast Asia and Latin America. Where GNP is higher than HDI, the social progress is behind economic wealth. These are typically the Mideastern oil monarchies.

Figure 24

Figure 24 reports yet another new source of relative productivity levels. Professor Angus Maddison, in "The World Economy in the 20th Century," written for OECD, calculates the 1986 GDP per man-hour levels against a 100 for the U.S. Japan's 51, versus 73 in Figure 18, is not a misprint. Since Japanese workers work much longer hours than their American counterparts, their performance on a per-man-hour basis is worse than on a per-employee basis.

Figure 23A

Top Twenty Human Development Index (HDI)* Countries, 1987

1. Japan
2. Sweden
3. Switzerland
4. Holland
5. Canada
6. Norway
7. Australia
8. France
9. Denmark
10. Britain
11. Finland
12. West Germany
13. New Zealand
14. Italy
15. Belgium
16. Spain
17. Ireland
18. Austria
19. U.S.A.
20. Israel

* A measure of human well-being that combines life expectancy, adult literacy, and purchasing power
Source: *The Economist*

Figure 23B

Biggest Rating Difference, HDI* versus GNP 1987

HDI > GNP	GNP > HDI
Sri Lanka	Oman
China	United Arab Emirates
Vietnam	Gabon
Burma	Saudi Arabia
Kampuchea	Angola
Laos	Libya
Chile	Iran
Costa Rica	Kuwait
Cuba	Algeria

* A measure of human well-being that combines life expectancy, adult literacy, and purchasing power
Source: *The Economist*

Figure 24

Labor Productivity Level, 1986 (GDP/Man Hour)

United States	100
Belgium	90
Canada	89
France	89
Netherlands	84
Norway	84
West Germany	79
Sweden	76
United Kingdom	75
Italy	74
Australia	73
Switzerland	73
Austria	70
Finland	65
Denmark	63
Japan	51
Chile	33
Argentina	28
Colombia	28
Mexico	27
Brazil	25
South Korea	21
Taiwan	20
Peru	20
Philippines	11
Thailand	10
China	9
Indonesia	8
Pakistan	8
India	4
Bangladesh	3

Source: Angus Maddison, "The World Economy in the 20th Century," OECD, 1989

Figure 25

Figure 25 presents an array of current economic factors relative to the generally prosperous 1984-87 period. Japan and Germany are the undisputed GNP growth leaders; others, such as the U.S., that were close in 1984-87 have now fallen back. The current inflation champion is the U.K., having hit double digits again. This is up more than three points from a year ago. Sweden and Switzerland have been hit by a similar malady, although the Swiss started from a lower base. The U.S. is in the middle of the inflation pack. Unemployment ranges from essentially nothing in Switzerland to double digits in Spain. Here there is difficulty in finding common definitions, but once again the U.S. is in the middle ranks.

Figure 26

The misery index is made up of inflation and unemployment and is an interesting long-term reference. Figure 26 shows European countries improving from 1985.

Figure 27

Private industry investment in plant and equipment is showing amazing strides in the past few years in Japan (Figure 27). With Japan's current stock market and land value declines, this number may be peaking for Japan in 1989. But it is still very far above Europe and the U.S. The absolute value of Japan's investment now exceeds that of the U.S. even though the U.S. has twice the GNP!

Figure 25

World Economic Factors

	Real GNP Growth		Consumer Price Inflation		Unemployment	
	Average % per Year 1984-87	% Last 12 Months*	Average % per Year 1984-87	% Last 12 Months*	Average % per Year 1984-87	% - Latest*
Australia	3.9	(0.7)	N/A	6.0	8.3	7.6
Belgium	1.9	N/A	3.6	4.1	11.4	8.2
Canada	4.4	0.5	4.2	4.8	10.0	8.8
France	1.8	3.0	4.8	3.8	10.3	8.9
Italy	3.0	1.9	7.5	6.5	N/A	9.8
Japan	4.0	5.4	1.2	3.5	2.7	2.2
Netherlands	2.3	1.6	1.5	2.9	9.8	5.1
Spain	3.8	3.5	N/A	7.0	20.6	15.7
Sweden	2.6	0.1	N/A	11.3	2.6	1.8
Switzerland	2.8	2.8	N/A	6.4	0.8	0.6
United Kingdom	3.1	0.5	4.6	10.9	11.0	6.0
United States	4.0	1.1	3.3	6.3	6.9	5.7
West Germany	2.4	5.5	1.2	3.1	6.7	6.7

* Last 12 months for GNP is usually October 1989–September 1990
Last 12 months for inflation is usually October 1989–September 1990
Latest for unemployment is usually October 1990

Source: *The Economist*, Central Intelligence Agency, OECD

Figure 26

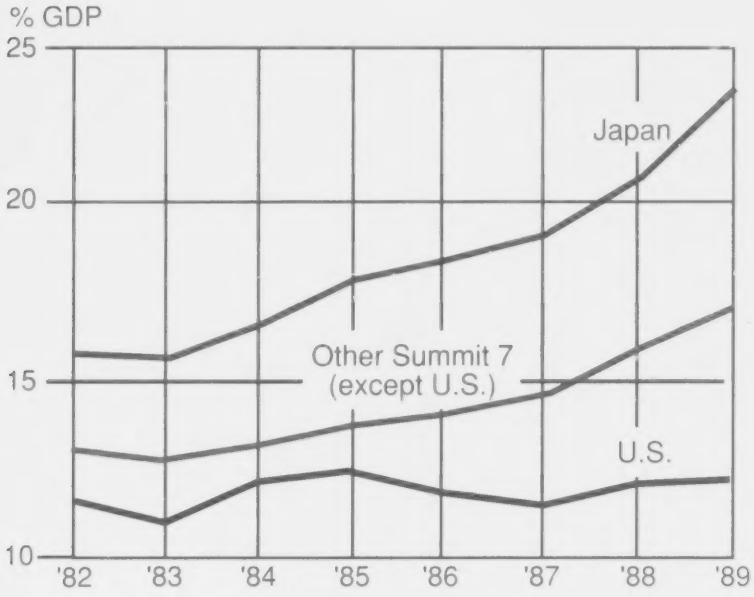
Misery Index*

	1970	1975	1980	1985	est. 1990
U.S.	16	25	28	18	18
Japan	10	20	13	7	8
West Germany	5	14	12	19	17
France	10	20	25	26	22
United Kingdom	12	30	30	29	23
Italy	16	29	36	30	26

•Inflation rate + twice unemployment rate
Source: *The Economist*, OECD

Figure 27

Private Industry Expenditure on Plant and Equipment



Source: Council on Competitiveness and OECD

Figure 28

National saving rates are shown in Figure 28 in two forms, personal saving as a percent of disposable income and national saving as a percent of GNP. The U.S. is on the bottom (joined by the U.K. in both) and Japan is on top (joined, surprisingly, by Italy in personal saving).

Figure 29

The trend in personal savings rate shows substantial declines for Japan, France and the U.K., with the U.S. and Germany steadier, but the U.S. at a horrible level to start with (Figure 29).

Figure 28

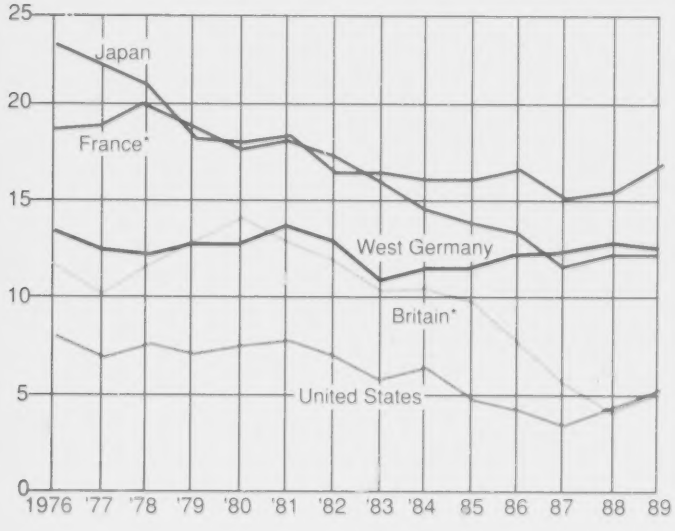
National Saving

	1989 Personal Saving as % Disposable Income	1988 National Saving as % GNP
Japan	15.3	33.3
Italy	14.1	20.9
West Germany	12.2	24.5
France	12.2	20.5
Canada	10.4	21.1
United States	5.6	15.1
United Kingdom	5.0	16.4

Source: OECD

Figure 29

Net Household Savings as % of Disposable Income



*Gross Savings
Source: OECD, Bank of Japan, *The Economist*

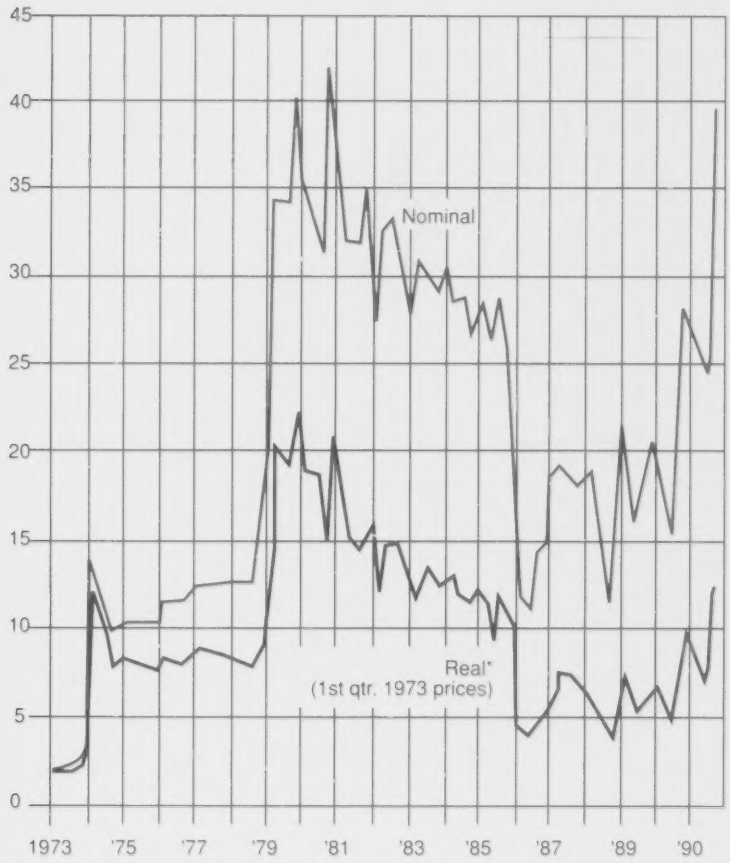
Figure 30

By the time the reader starts reading this, there is absolutely no telling where the oil price will have reached. But Figure 30 shows that even in the most wildly pessimistic cases, it is unlikely that the world will be paying more for crude in real terms than it was in 1979-81. But that does not take away the disruptive effects that can be expected.

Figure 30

Real Oil Price

Price of North Sea Brent Oil (Saudi Arabian Light Until End 1982)



*Deflated by U.S. Consumer Prices
Source: *The Economist*

Figure 31

Figure 31 is an attempt to sort out winners (if any) and losers in regard to oil import vulnerability. The oil export/import balance is shown as a percent of GDP. Nigeria, which gets 20 percent of its GDP from oil exports, is the main "winner" and Turkey, with oil imports equal to almost 4 percent of its GDP, is the largest loser.

Figure 32

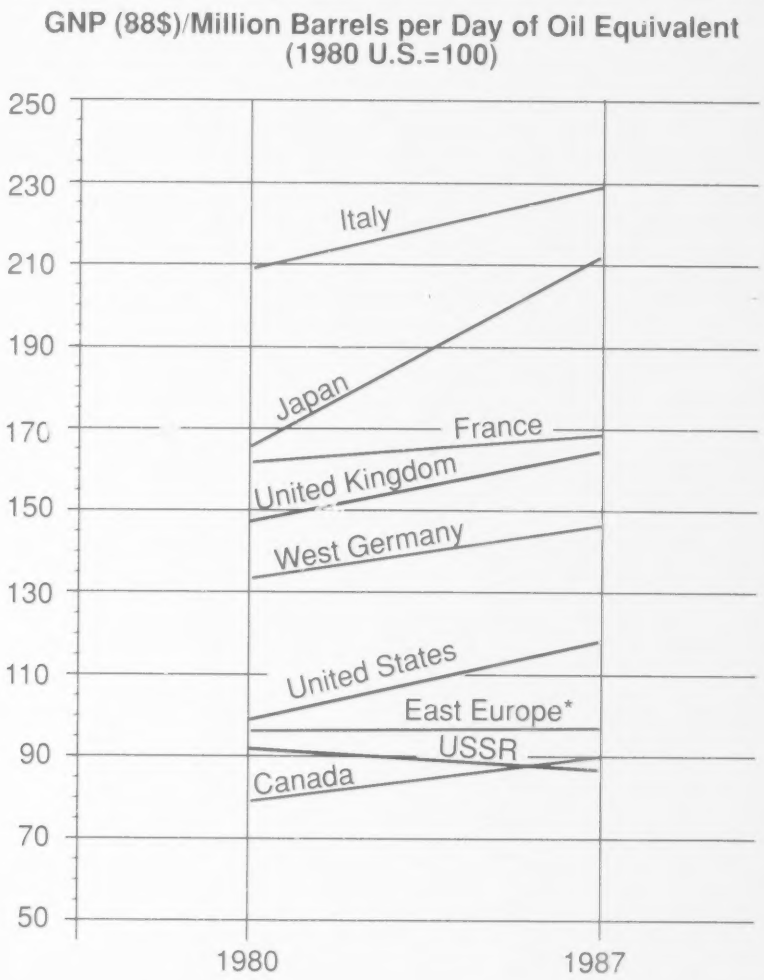
Energy productivity (GNP/oil used) becomes interesting again whenever there is an oil crisis. Figure 32 provides both level and trend data. Italy and Japan are the lightest users of energy, both having improved well from 1980. The U.S.S.R., an Eastern Europe composite (the last year we can use that concept), and Canada are the heaviest users. The U.S. used to be in that category but has made reasonable improvement in the past decade. Obviously the data on level of energy use carry much effect of geography (distances, weather, extractive industry) in addition to "productivity" overtones.

Figure 31
Oil Price Winners and Losers

	Oil Export or Import Balance as % of GDP
Net Oil Exporters	**1989**
Nigeria	+20.4
Venezuela	+13.0
Mexico	+ 4.3
Soviet Union	+ 1.5
Canada	+ 0.3
Britain	+ 0.1
Net Oil Importers	
Australia	- 0.3
Argentina	- 0.5
Hungary	- 0.6
United States	- 0.9
South Africa	- 0.9
France	- 1.1
Japan	- 1.1
Poland	- 1.1
West Germany	- 1.1
Brazil	- 1.3
Italy	- 1.4
Spain	- 1.6
Czechoslovakia	- 1.9
Kenya	- 3.2
South Korea	- 3.2
Turkey	- 3.8

Source: *The Economist*

Figure 32
Comparative Energy Productivity



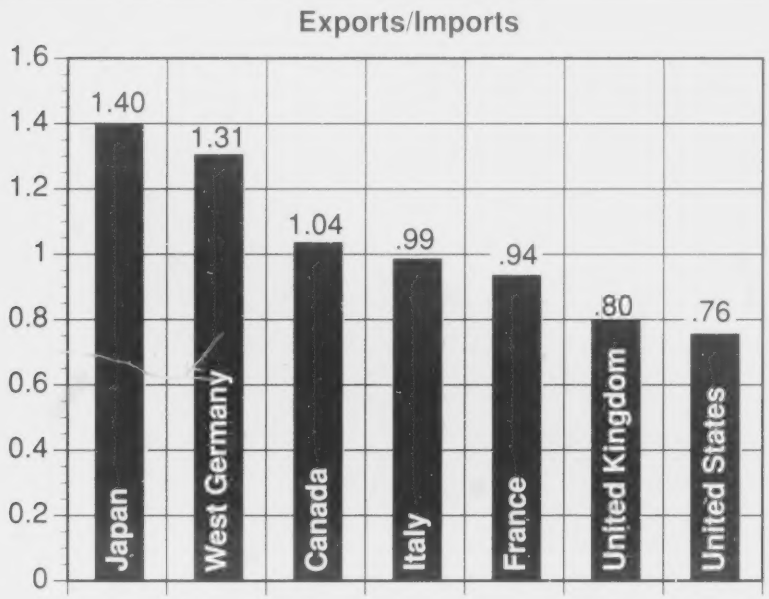
*East Germany, Poland, Czechoslovakia, Hungary, Romania, Bulgaria
Source: Central Intelligence Agency

Figure 33

International trade balances are provided in Figure 33. Japan and Germany have the highest relative surpluses. The U.S. ratio of exports to imports has improved to .76 from .70 in 1988 but is still last.

Figure 33

International Trade Balances, 1989



Exports	$Billions	Imports
362	United States	475
172	France	183
326	West Germany	248
140	Italy	142
151	United Kingdom	189
270	Japan	193
121	Canada	116

Source: Organization for Economic Cooperation and Development

Figures 34A and B

Foreign direct investment in the U.S. (Figures 34A and B) has been a politician's theme for some time. This investment is growing rapidly (up 22 percent in 1989) but it is not always in the sectors or from the sources you might expect. About 40 percent of the investment is in manufacturing, but only about 10 percent of that is from Japan. The U.K. and Netherlands have higher manufacturing investments in the U.S. Japan's largest investment is in wholesale trade, with another important investment in real estate and bank/finance. Bank/finance is the main growth area for foreign investment, but its level is still only 10 percent of total foreign investment.

Figure 34A

Foreign Direct Investment in U.S., 1989

$ Billions

Industry	Total World	UK	Neth.	Other Europe	Japan	Canada	Rest of World
Manufacturing	160	51	24	47	17	12	9
Wholesale Trade	55	11	3	13	20	2	6
Petroleum	35	17	11	3	0	2	2
Real Estate	36	5	3	3	14	4	7
Insurance	23	7	5	5	N/A	3	N/A
Bank/Finance	31	5	8	4	10	2	2
Retail Trade	17	10	2	2	0	1	2
Mining	7	1	0	1	N/A	1	N/A
Other	37	12	4	5	N/A	5	N/A
Total	401	119	60	83	70	32	37

Source: Department of Commerce

Figure 34B

Change in Foreign Direct Investment in U.S.

$ Billions

Industry	1988	1989	Change	% Change
Manufacturing	121	160	39	24
Bank/Finance	20	31	11	55
All Others	188	210	21	12
Total	329	401	71	22

Source: Department of Commerce

Figure 35

The issue of Japanese competitiveness is particularly urgent in the high-tech products that used to be the major strength of the U.S. Figure 35 presents the trends in market share of selected high-tech product categories. In aerospace, the U.S. remains dominant, but in computers and precision equipment, where the U.S. was also strong, the Japanese strides are dramatic.The U.S. has also lost significant ground to the Japanese in machine tools, telecommunications equipment, and microelectronics.

Figure 36

Figure 36 presents the money markets in place in December 1990. The U.S. real interest rate is surprisingly low and cannot be expected to remain there and still attract net increase in foreign investment, which is necessary to support continuing deficits of the federal government. Japan's nominal interest rate is the highest it has been in years without increasing inflation, so their real interest rate will succeed in keeping Japanese capital "home."

Figure 35

Market Share of Selected High-Tech Exports

	U.S.		Japan	
	1980	1987	1980	1987
Microelectronics	18.3%	13.6%	13.2%	22.7%
Computers	38.6	24.6	4.3	17.4
Telecommunications Equipment	10.9	8.3	10.3	29.5
Aerospace	47.6	45.2	0.6	0.8
Machine Tools/Robots	14.1	11.7	11.3	20.9
Scientific/Precision Equipment	28.3	21.8	7.1	11.3
Medical/Biological	11.4	10.6	2.2	2.6
Organic Chemicals	13.9	11.7	6.3	7.3

Source: Central Intelligence Agency

Figure 36

Money Markets, December 1990

	Nominal Interest Rates *	Last 12 Months Inflation	Real Interest Rates
United States	8.1%	6.3%	1.8%
Canada	12.1	4.8	7.3
France	10.0	3.8	6.2
Italy	13.6	6.5	7.1
West Germany	9.2	3.1	6.1
United Kingdom	13.6	10.9	2.7
Japan	7.6	3.5	4.1

* 3-Month Money Market
Source: *The Economist*

Figure 37

The U.S. is becoming a "cheap labor" area! Figure 37 gives the hourly labor costs in dollars for several industrial countries, the majority of which have higher wage rates than the U.S. Germany is more than 25 percent higher than the U.S. in 1989, although the influx of East Germans may dampen this. Japan and the U.S. are nearly in a tie. Only in the U.K. is there truly cheap labor, more than 20 percent cheaper than in the U.S.

Figure 38

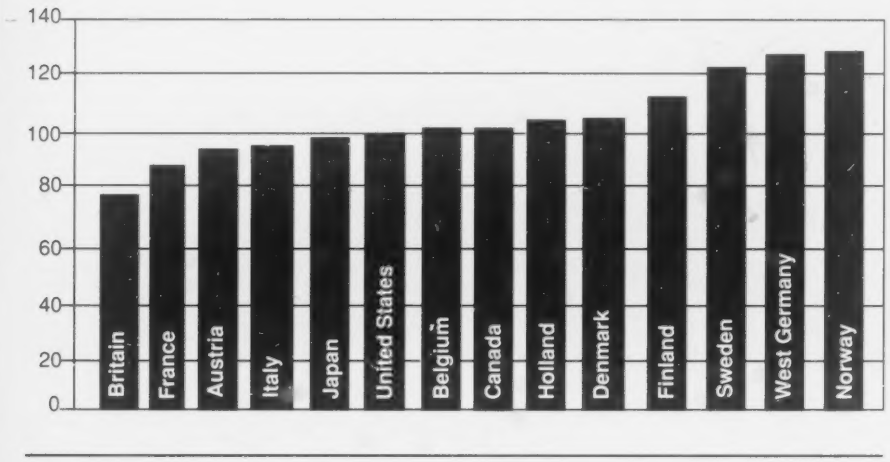
The Japanese lead the world in hours worked per employee by a high margin. They average almost 47 hours per week, versus nearly 40 in the U.S. and as little as 34 in the Netherlands. Figure 38 again shows the U.S. in the middle of the pack in a key indicator.

Figure 39

The structure of part-time versus full-time employment is an interesting reflection of differing social policies in different countries. Where there is no great difficulty in hiring and firing, there is less incentive for part-time or unofficial workers. But where job security is strong, hiring a full-time worker is a more serious decision that might be hedged for some time. Figure 39 shows a surge in part-time work in Holland, France and Britain. Part-time workers are more than 20 percent of the work force in Holland, Denmark, and Britain.

Figure 37

Total Manufacturing Labor Costs Per Man Hour*

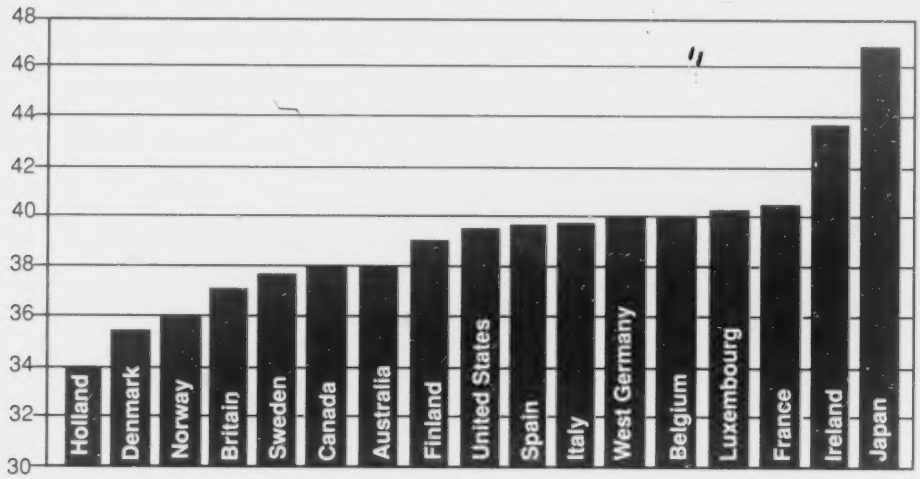


* United States=100
Source: Swedish Employers' Confederation

Figure 38

Average Weekly Hours Worked

(Full- and Part-Time Employees)



Source: Organization for Economic Cooperation and Development

Figure 39

Part-Time Employment as % of Total Employment

	1980	1988
Belgium	6.4	9.8
Britain	17.9	21.9
Denmark	23.7	24.2
France	8.3	12.0
West Germany	12.0	13.2
Greece	3.3	5.5
Holland	18.8	25.1
Ireland	5.1	8.1
Italy	5.1	5.6
Luxembourg	5.8	6.6
Portugal	7.3	6.5
Spain	N/A	4.8

Source: OECD, *The Economist*

Figure 40

A major social issue that rapidly becomes an economic issue is the aging of the population. This is already starting to happen in several key countries, notably Japan and Germany, and twenty years out will occur in France and the U.K. as well. Only the U.S. is saved from a dangerously high ratio through 2020 at least (Figure 40).

Figure 41

The exchange rate of the dollar has a bearing on a number of the issues presented. Great world realignments took place in the 1985-87 period as the relative value of the dollar fell precipitously. Figure 41 shows it has stabilized fairly well since then on a trade-weighted basis, but the instability has encouraged multinationals from both the U.S. and Japan to "hedge" their production balance by locating plants in each other's territories.

Figure 42

The position of the government in the economy is a controversial issue. Figure 42 shows that most countries have seen a large recent increase in public debt as a percent of GNP/GDP. The lone exception is the U.K., which has reduced a great deal of debt in the last three years, partly as a result of extensive privatization of major industries.

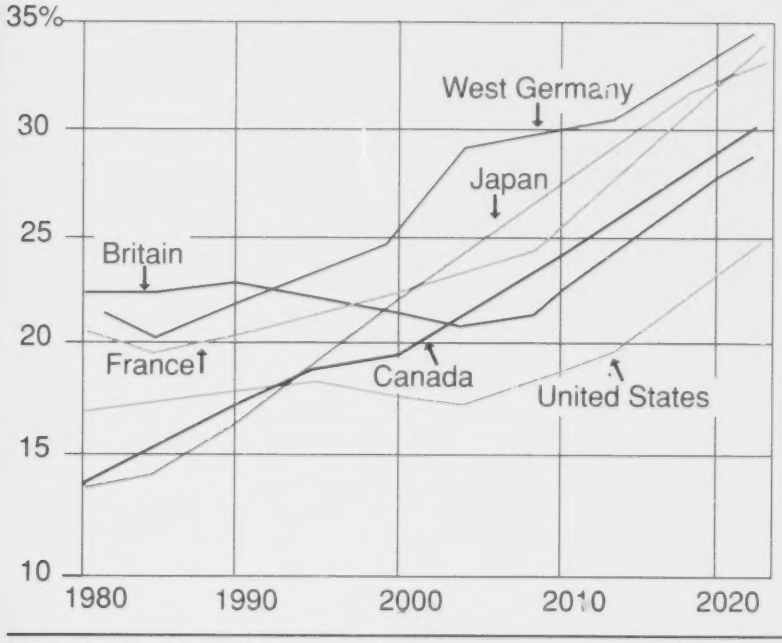
Figure 43

Shifting from the balance sheet to the income statement, the U.S. is lower than anyone but Japan in government expense as a percent of GDP. Figure 43 demonstrates that the U.S.'s 36 percent compares favorably to a European average in the high 40's.

Figure 40

The Pensions Burden

Old-Age Dependency Ratios*



*Ratio of population aged 65 and over to population aged 15-64
Source: OECD

Figure 41

Trade–Weighted Dollar Exchange Rate*

*Index: March, 1973=100
Source: Federal Reserve Board

Figure 42

Gross Public Debt as a Percent of Nominal GNP/GDP

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
United States	37.2	41.4	44.2	45.2	48.3	51.1	51.6	51.4	51.4	59.9
Japan	57.1	61.1	66.9	68.4	69.1	72.8	75.5	71.8	68.0	63.8
West Germany	36.3	39.5	40.9	41.5	42.2	42.4	43.7	44.4	42.7	42.1
France	36.4	40.1	41.4	43.8	45.4	45.4	47.3	47.5	47.3	46.9
Italy	61.0	66.3	71.9	77.1	84.0	88.5	92.7	95.0	97.0	99.3
United Kingdom	54.5	53.1	53.3	54.8	53.3	51.9	49.5	44.0	39.6	37.0
Canada	45.1	50.1	56.1	58.8	64.6	68.6	68.8	68.5	69.2	70.0

Source: OECD, *Wall Street Journal*

Figure 43

Government Outlay/GDP

	1981	1988
United States	34.1%	36.3%
Japan	33.5	32.9
West Germany	49.2	46.6
France	48.7	50.3
Italy	45.8	50.8
United Kingdom	47.7	43.2*
Canada	41.5	44.4

* 1987 data
Source: OECD
Perspectives '91

IV. Conclusion

Everything starts with the twin deficits. Without progress in reducing them, the U.S. will become increasingly dependent on foreign investors (and adventurers) to bail out the U.S. economy. Since these nations have their own agendas, the effect is not necessarily in the long-range interest of the U.S.Whether or not there is an official recession in the U.S., there is clear stagnation in productivity improvement, and productivity improvement is the engine of progress for pulling a country out of deficits.

Europe has severe integration challenges. Japan has to control its stock market and its upcoming social and demographic problems. All the developed economies will have to face direct challenges from the underdeveloped world and the more subtle challenges from the multinational corporation.

But the bottom line for the U.S. executive is to regain the initiative in productivity and quality improvement at the firm level. The consequent improvement in cost and quality will improve U.S. competitiveness regardless of what happens in the macroeconomic world portrayed in this chartbook.

Glossary of Terms Used in Perspectives

Business Fixed Investment

Nonvariable business investment in plant, equipment, and other fixed capabilities. Excludes variable investment such as working capital.

Capacity Utilization

A widely used ratio that relates total capacity available to the portion of that capacity actually used during a designated period. For example: passenger seat-miles sold to seat-miles available.

Cash Flow

The net cash proceeds of a productive process; usually includes earnings, depreciation, and other non-cash expenses.

Dependency Ratio

The percent of the population over age 65 to the total potential working population (typically those aged 15 to 64).

Disposable Personal Income

The amount of a family's income available after all taxes have been paid.

Gross Domestic Product (GDP)

Comparable in concept and approach to Gross National Product except that Domestic Product does not include overseas earnings or income of government or private sector entities.

Gross National Product (GNP)

The market value of the final output of goods and services generated by the nation's economy as of a specified time span, including values generated both in the national boundaries and in earnings from overseas. Excludes non-market items such as the efforts of a homemaker. GNP is a value-added concept in that it measures for each input element the net contribution, excluding purchased inputs such as materials, energy and fuels, components, and contract services, thus avoiding double counting.

Human Development Index

A means of rating nations that includes life expectancy and adult literacy in addition to real GNP per capita.

Input

Inputs, as conventionally applied in productivity measurement, are expressions of the physical amount or the dollar value (cost) of the several elements utilized in production.

Labor Input

A measure of human involvement in production, and the most generally used input measure. May be expressed in terms of number of employees or number of hours worked during the designated period. In rare instances (such as GNP per capita) the "labor" input is simply the headcount of the non-institutional population.

Misery Index

A very rough method of evaluating a nation's economic condition; the sum of the inflation rate plus twice the unemployment rate.

Nominal

As something first appears or is reported; nominal interest rates are rates before considering currency inflation.

Output

At the plant and office level, outputs are often expressed in physical terms—i.e., tons of steel, linear feet of pipe, memos typed, etc. However, outputs are expressed in dollar terms for entities of the "macro economy."

Private Domestic Economy

Similar in approach and concept to GNP and GDP except that the relevant outputs of government (federal, state, and local), nonprofit entities, and private households are excluded.

Productivity

Output of goods and services per unit of input of resources used in a process, ideally measured in physical volumes. May be cited for any level of a productive endeavor from a staff department or individual up to aggregate measures for a production plant, company, industry, or a total economy.

Purchasing Power Parity

A method for comparing dollar aggregates, such as outputs, between different countries. The domestic costs of a common set of commodities and services in each country and their national currency inflation rates are the building blocks. Better for longer term economic analysis than translation using volatile market exchange rates.

R&D

Research and development; expenses made to advance new products, services, or processes with benefits to be received partly in future time periods.

Real

With effects of inflation removed; constant dollars. The opposite is "nominal" or "reported."

Standard of Living

A measure of quality of life across countries and regions. Common specific measures used are real GNP per capita and real compensation per hour.

Unit Labor Cost

The net increase in cost of a unit of labor for a business or agency. It is usually calculated from nominal compensation per hour growth less improvement (if any) in labor productivity during the same time period. The implication is that wage growth is costless to a business if labor productivity is improving just as rapidly.

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American Productivity & Quality Center
Education and Training

The Center offered its first public courses in 1979. Each year since then, hundreds of people have attended courses held at the Center's headquarters and convenient regional sites. Center courses are also delivered at a client's location in either standard or customized form.

Courses cover a wide range of productivity and quality topics, from activity-based cost management to employee involvement. They are updated frequently, and new courses are developed regularly. As many as ten new courses may be added this year.

Center consultants are the lead teachers for each course. They enrich the educational experience by bringing in real-world cases from factories, offices, laboratories, and executive suites where they work and where productivity and quality improvement techniques are put into practice.

In addition to delivering instruction, the Center's Education and Training Department assists companies with needs assessment and training planning.

For more information on courses held at the Center or at your location, contact:

Education and Training Department
American Productivity & Quality Center
123 North Post Oak Lane
Houston, TX 77024
713/681-4020

Advisory Services and Research

In addition to providing publications, information services, and group training sessions, the American Productivity & Quality Center works directly with member companies and others to plan, implement, and evaluate productivity and quality improvement efforts. Center consultants work with companies on individual and multi-client projects in the following areas:

- Assessment: Collecting and interpreting data on the productivity and quality practices of organizations, on employee attitudes, and on an organization's overall climate.
- Employee Involvement: Improving productivity, quality, and quality of work life through a more committed work force, using vehicles ranging from problem-solving groups to autonomous work teams.
- Gain Sharing and Other Reward Systems: Designing group incentives that will motivate employees to continuous improvement.
- Labor-Management Cooperation: Improving communication and joint decision making in unionized environments.
- Productivity and Quality Measurement: Developing indicators of productivity and quality performance for any part of the organization, ranging from the Center's total factor model for profit center analysis to families of measures for staff groups.
- Total Quality Management: Developing organization-wide systems that assure that final products and services satisfy customers and that the processes for designing and producing those products and services will continue to assure quality.
- White Collar Productivity Improvement: Overcoming the special assessment, measurement, and work redesign problems associated with workers in the white collar environment. Includes IMPACT, a six-phase process for planning and implementing participative improvement action in white collar service support departments.

The Malcolm Baldrige National Quality Award

For nearly a decade, the American Productivity & Quality Center advocated the creation of a national quality award, similar to Japan's Deming prize. When legislation was passed to establish the Malcolm Baldrige National Quality Award, the Center played a major role in shaping the Award.

We are proud of our contributions to an Award that has captured the competitive spirit of American industry. We congratulate the winners and hope that their success spurs others onward toward excellence.

You can take the first step. For further information on the Award, please contact:

Special Projects
American Productivity & Quality Center
123 North Post Oak Lane
Houston, Texas 77024
(713) 681-4020

In addition to the Baldrige Award, Special Projects handles a data base of productivity and quality improvement tools and techniques, the Center's Speakers Bureau, quality-related videos produced in collaboration with Encyclopaedia Britannica, conferences on communicating quality, and production of quality training courses with the National Technological University.

American Productivity & Quality Center Publications
Price List (Effective June 1990)

PUBLICATION	MEMBER PRICE	NONMEMBER PRICE
Periodicals		
Brief	$ 5.00 ea	$ 7.00 ea
Case Study	5.00 ea	7.00 ea
Consensus	5.00 ea	7.00 ea
Letter	5.00 ea	7.00 ea
Notebook	5.00 ea	7.00 ea
Other Publications — Published on a One-Time Basis and Sold as Available		
Assessment: Do's, Don'ts, and Maybe's	15.00 ea	25.00 ea
Digest (Annual)	20.00 ea	35.00 ea
Employee Involvement in America (1989)	25.00 ea	40.00 ea
International Productivity Dynamics (1990)	20.00 ea	35.00 ea
Issues and Innovations (1987)	20.00 ea	35.00 ea
The Measurement Model of Employee Performance	5.00 ea	15.00 ea
Measuring White Collar Work (1988)	20.00 ea	35.00 ea
Multiple Input Productivity Index (MIPI) 1988 Edition	20.00 ea	35.00 ea
People, Performance, and Pay: Full Report (1987)	25.00 ea	40.00 ea
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Overheads	4.00 ea	6.50 ea
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White Collar Productivity Improvement Project Summary and Findings (1985)	20.00 ea	35.00 ea
Executive Summary	15.00 ea	25.00 ea
Books—Sold by Special Arrangement with Publishers		
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Kaisha: The Japanese Corporation	10.95 ea	12.95 ea
Maximum Performance Management	15.00 ea	15.00 ea
Productivity Plus+	23.95 ea	26.95 ea
Solving Quality and Productivity Problems: Goodmeasure's Guide to Corrective Action	21.95 ea	24.95 ea
The Team Handbook	31.00 ea	35.00 ea
When Giants Learn to Dance	19.95 ea	21.95 ea
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To order by phone, call toll-free 1-800-366-9606 (USA only)

Send FAX orders to 713/681-8578

Or mail orders to:
Information Services Department
American Productivity & Quality Center
123 North Post Oak Lane
Houston, TX 77024

Prices and availability subject to change without notice.

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